



(11) **EP 4 670 762 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
21.01.2026 Bulletin 2026/04

(51) International Patent Classification (IPC):
A61M 5/31 ^(2006.01) **A61M 5/32** ^(2006.01)

(43) Date of publication A2:
31.12.2025 Bulletin 2026/01

(52) Cooperative Patent Classification (CPC):
A61M 5/3202; A61M 5/3129; A61M 5/178;
A61M 5/20; A61M 2205/586

(21) Application number: **25208375.3**

(22) Date of filing: **29.06.2018**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR

(30) Priority: **30.06.2017 US 201762527408 P**

(62) Document number(s) of the earlier application(s) in
accordance with Art. 76 EPC:
18745734.6 / 3 645 083

(71) Applicant: **Regeneron Pharmaceuticals, Inc.**
Tarrytown, NY 10591 (US)

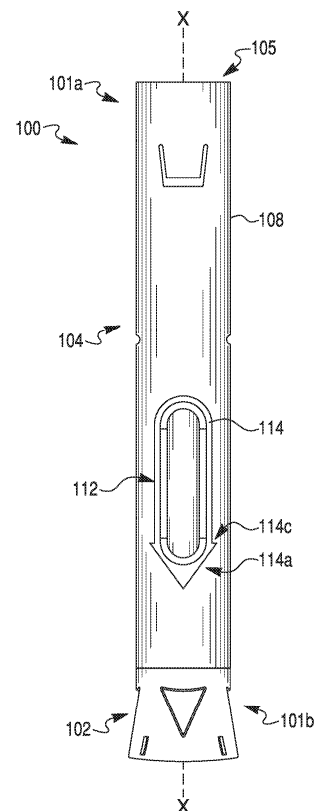
(72) Inventors:
• **NICHOLAS, Courtney**
New York, 10591 (US)
• **BARTON, Scott**
New York, 10591 (US)
• **BURGESS, Bart**
New York, 10591 (US)
• **GORALTCHOUK, Alexei**
New York, 10591 (US)

(74) Representative: **Eisenführ Speiser**
Patentanwälte Rechtsanwälte PartGmbH
Johannes-Brahms-Platz 1
20355 Hamburg (DE)

(54) **AUTO-INJECTOR WITH ANTI-ROLL FEATURES**

(57) The present disclosure relates to a therapeutic agent delivery device with anti-roll features. In one embodiment, a therapeutic agent delivery device may include a tubular body including a first end portion, a second end portion, and a lumen extending between the first end portion and the second portion. An outer surface of the tubular body includes a first opening in communication with the lumen. The outer surface of the tubular body further may include a ledge extending around a periphery of the first opening, and a portion of the ledge closest to the second end portion of the tubular body may be shaped as an arrowhead. The therapeutic agent delivery device also may include a cap configured to engage the second end portion of the tubular body, wherein the cap may include a central longitudinal axis, a first end having a first cross-sectional dimension, and a second end having a second cross-sectional dimension larger than the first cross-sectional dimension. The cap may further include a curved sidewall extending radially outward from the first end to the second end, and the curved sidewall may include a protrusion.

FIG. 1A





EUROPEAN SEARCH REPORT

Application Number

EP 25 20 8375

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	FR 3 043 562 A1 (APTAR FRANCE SAS [FR]) 19 May 2017 (2017-05-19) * the whole document *	1-15	INV. A61M5/31 A61M5/32
A	WO 2015/026737 A1 (REDDYS LAB LTD DR [IN]) 26 February 2015 (2015-02-26) * column 11, line 35 - line 41; figures 1-7B *	1-15	
A	EP 2 716 318 A1 (SANOFI AVENTIS DEUTSCHLAND [DE]) 9 April 2014 (2014-04-09) * paragraph [0042]; figures 1-12 *	1-15	
X	WO 2017/004345 A1 (KALEO INC [US]) 5 January 2017 (2017-01-05) * the whole document *	1-15	
X	AU 2007 269 791 B2 (ABBVIE BIOTECHNOLOGY LTD [BM]) 3 October 2013 (2013-10-03) * figures 23, 25 *	1-15	TECHNICAL FIELDS SEARCHED (IPC)
X	JP 2016 073364 A (TERUMO CORP) 12 May 2016 (2016-05-12) * figures 1-12 *	1-15	A61M
X	US 2007/239114 A1 (EDWARDS ERIC S [US] ET AL) 11 October 2007 (2007-10-11) * figure 10 *	1	
A		2-15	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 11 December 2025	Examiner Haslinde, Verena
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P34C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 25 20 8375

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

11-12-2025

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
FR 3043562	A1	19-05-2017	CN	108348692 A	31-07-2018
			EP	3374008 A1	19-09-2018
			FR	3043562 A1	19-05-2017
			JP	6841824 B2	10-03-2021
			JP	2018533432 A	15-11-2018
			US	2018311442 A1	01-11-2018
			WO	2017081421 A1	18-05-2017

WO 2015026737	A1	26-02-2015	CA	2921927 A1	26-02-2015
			EP	3035980 A1	29-06-2016
			JP	2016528013 A	15-09-2016
			US	2015051580 A1	19-02-2015
			US	2015374918 A1	31-12-2015
			US	2018221581 A1	09-08-2018
			WO	2015026737 A1	26-02-2015

EP 2716318	A1	09-04-2014	CN	104797283 A	22-07-2015
			DK	2903669 T3	29-08-2022
			EP	2716318 A1	09-04-2014
			EP	2903669 A1	12-08-2015
			EP	4151255 A1	22-03-2023
			HK	1209070 A1	24-03-2016
			JP	6328121 B2	23-05-2018
			JP	2015530199 A	15-10-2015
			US	2015258286 A1	17-09-2015
			WO	2014053496 A1	10-04-2014

WO 2017004345	A1	05-01-2017	AU	2016287571 A1	21-12-2017
			AU	2021232756 A1	14-10-2021
			AU	2023204332 A1	27-07-2023
			CA	2990950 A1	05-01-2017
			CN	107835700 A	23-03-2018
			EP	3316928 A1	09-05-2018
			EP	4166170 A1	19-04-2023
			GB	2556479 A	30-05-2018
			JP	6830067 B2	17-02-2021
			JP	7046422 B2	04-04-2022
			JP	2018519023 A	19-07-2018
			JP	2021062282 A	22-04-2021
			US	2018304017 A1	25-10-2018
			US	2020197612 A1	25-06-2020
			US	2023076855 A1	09-03-2023
			WO	2017004345 A1	05-01-2017

AU 2007269791	B2	03-10-2013	AU	2007269791 A1	10-01-2008
			BR	PI0713802 A2	06-11-2012

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 25 20 8375

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

11-12-2025

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		CA 2651992 A1	10-01-2008
		CN 101484199 A	15-07-2009
		CN 103316402 A	25-09-2013
		CN 103316403 A	25-09-2013
		CN 107243099 A	13-10-2017
		EP 2043711 A2	08-04-2009
		IL 195235 A	28-05-2014
		IL 215312 A	31-05-2015
		IL 221300 A	29-02-2016
		IL 221301 A	30-07-2015
		JP 5535623 B2	02-07-2014
		JP 5758860 B2	05-08-2015
		JP 5913422 B2	11-05-2016
		JP 6133949 B2	24-05-2017
		JP 2009542334 A	03-12-2009
		JP 2013034869 A	21-02-2013
		JP 2014208026 A	06-11-2014
		JP 2015142747 A	06-08-2015
		JP 2016039906 A	24-03-2016
		JP 2017185255 A	12-10-2017
		KR 20090025305 A	10-03-2009
		KR 20120112503 A	11-10-2012
		NZ 572765 A	31-08-2012
		NZ 595605 A	31-05-2013
		NZ 608925 A	31-10-2014
		RU 2011137704 A	20-03-2013
		RU 2015135983 A	03-03-2017
		SG 173339 A1	29-08-2011
		TW 200819154 A	01-05-2008
		TW 201406419 A	16-02-2014
		TW 201406420 A	16-02-2014
		US 2010160894 A1	24-06-2010
		US 2012107783 A1	03-05-2012
		US 2015037772 A1	05-02-2015
		US 2016089495 A1	31-03-2016
		US 2017203041 A1	20-07-2017
		WO 2008005315 A2	10-01-2008
		ZA 200810349 B	24-11-2010
		ZA 201006269 B	26-06-2019

JP 2016073364 A	12-05-2016	JP 6479394 B2	06-03-2019
		JP 2016073364 A	12-05-2016

US 2007239114 A1	11-10-2007	US 2007239114 A1	11-10-2007
		US 2010121275 A1	13-05-2010
		US 2012071829 A1	22-03-2012

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

11-12-2025

EPO FORM P0459

5